

7550 Sunwood Drive NW | Ramsey, MN 55303
Building 763-433-9850
Planning 763-433-9824
www.cityoframseymn.gov/permits
permits@cityoframseymn.gov

Deck/Covered Deck Permit



This handout is a compilation of some of the standard requirements of the 2020 Minnesota Residential Code and City Zoning Code for projects of this type. It does not contain all of the specific code requirements for construction and should only be used as a guide. The permit holder is responsible for meeting all code requirements applicable to each project.

Building Permits

Building permits are required for decks, with the following exception: decks and platforms not more than 30 inches above adjacent grade and not attached to a structure with frost footings and which is not part of an accessible route. Freestanding decks do not require footings to extend to the frost depth. In addition, building permits are not necessary for patios made of concrete or pavers on grade. However, zoning requirements may apply to these types of projects. Contact the Planning Division for details by calling 763-433-9824.

All deck permits are processed online at epermits.logis.org/home.aspx?city=ra. The permit application must be completed and shall include the following documents:

1. A site plan identifying dimensions, setbacks, septic (if applicable), and where on the property the deck will be located;
2. A detailed plan for the deck construction showing precisely how the deck will be built.

Building permit applications are added to the queue for review after receiving a complete set of plans, and they are reviewed in the order they are received.

Permit Expiration

The permit will expire if work has been suspended for more than 180 days following its issuance, or more than 180 days following the date of the last inspection. If unforeseen circumstances delay construction, contact the Building Division at 763-433-9850 before your permit expires to request an extension.

Plans

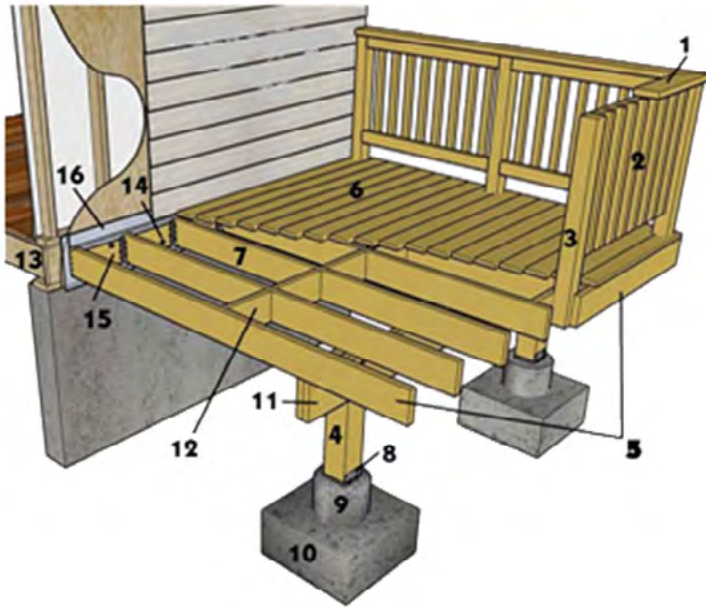
Building plans must depict precisely where and how the deck will be built. It is recommended that plans be neat and drawn to scale. Plans are reviewed for code compliance. The applicant will receive an email notification to access any required corrections if needed. Please review the plans when you receive them to be aware of any necessary corrections.

Please retain a copy of your approved plans, permits, and inspection cards for future needs.

Inspections

1. To schedule an inspection and view availability, please visit the ePermits website at epermits.logis.org/search.aspx?city=ra or call 763-433-9850 for assistance. Available inspection times may vary. Have the address, permit number, and type of inspection (i.e. footing) ready.
2. Footing Inspection: Holes are dug, and loose material/water is removed and prior to pouring concrete. Building plans and an inspection card are on site.
3. Framing Inspection: Framing completed and materials visible. Plans and inspection card on-site.
4. Final Inspection: All work is complete, and all stairs, handrails, and guards are in place. Plans and an inspection card are on-site. Installation information for composite decking is also on-site.
5. If the work is approved, the inspector will sign the inspection card, and work may proceed.
6. If corrections are noted, a correction notice will be left on the site and a reinspection will be needed.
7. If you have questions, please contact the Building Division at permits@Cityoframseymn.gov or 763-433-9850.

Terminology



- | | |
|------------------------|--------------------|
| 1. Rail Top Cap | 9. Pier |
| 2. Balusters | 10. Footing |
| 3. Rail Post | 11. Drop Beam |
| 4. Support Post | 12. Blocking |
| 5. Rim or Band Joist | 13. House Joist |
| 6. Decking | 14. 1/2-inch Bolts |
| 7. Joists | 15. Ledger Board |
| 8. Post Base connector | 16. Flashing |

Enclosing the Deck in the Future?

Deck plans are reviewed based on the plans provided to show that the deck will be used only as a deck for the life of the structure. Since footing sizes, setbacks, structural supports, and many other deck components are different for enclosed spaces than they are for decks, submitted plans must indicate the desire to convert the deck at a future date. These plans must also include the proposed design of the conversion to an enclosed space. The deck must be designed to carry future loads and to meet all setback and zoning requirements.

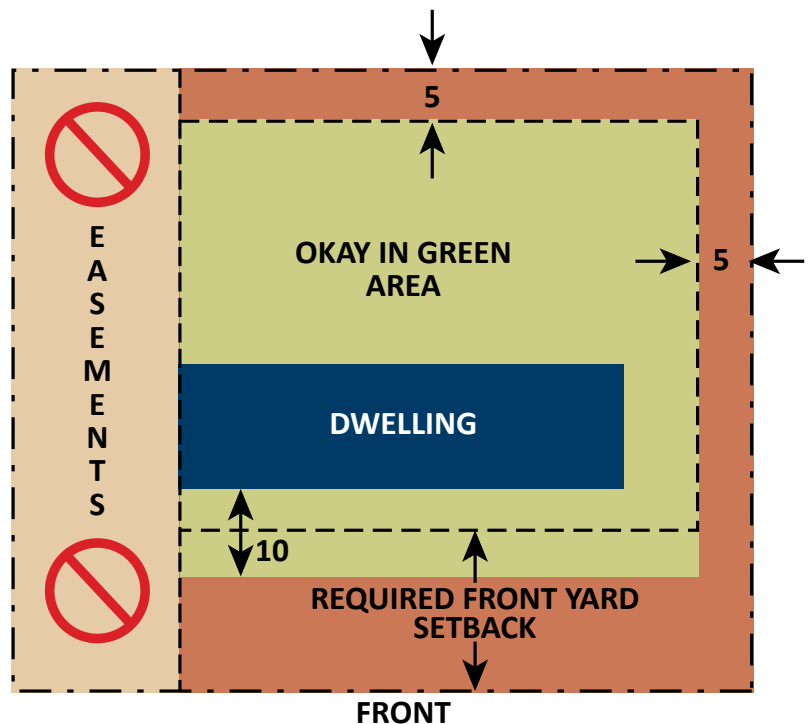
Zoning and Setback Regulations

Decks and patios must meet the following front yard setbacks:

1. 30 feet for properties in the RR zoning district.
2. 15 feet for properties in all other residential zoning districts.

Decks can never be in an easement. Decks with roofs (or proposed roofs) must meet the setback requirements for the principal structure. Decks and patios must also meet the following minimum setbacks:

1. 5 feet from the side and rear property lines
2. 10 feet from the nearest edge of a septic tank
3. 20 feet from the nearest edge of a drain field.



Zoning and Setback Regulations (continued)

Setbacks are routinely checked as part of the plan review. The permit applicant is responsible for exposing or identifying the survey markers or corner stakes to assist the inspector in verifying setbacks. Examples of survey markers can be found in the images below. If you cannot find your survey markers, you may need to hire a Minnesota-licensed surveyor to identify the survey markers.

Easements, wetland buffers, and other lot restrictions may require greater setbacks than the zoning ordinance permits. The most restrictive setback applies. Questions regarding zoning regulations should be directed to the Planning Division at 763-433-9824.

Survey Marker Examples



Gopher State One Call

To verify utility locations, call **Gopher State One Call** at least 48 hours prior to digging. They can be reached at 651-454-0002, 811, or by visiting their website at www.gopherstateonecall.org.



**Know what's below.
Call before you dig.**

Materials Lumber

All wood used in deck construction must be No. 2 grade or better, preservative-treated or approved. Naturally, durable lumber, such as redwood or cedar, is resistant to decay.

The wood used above ground, in contact with the ground, or below ground requires different degrees of treatment. Check the labels of the material you buy to determine where it can be used. Because some preservative treatments are very corrosive, be sure that any fasteners or metal connectors used in the deck's construction are approved by the manufacturer for use with treated wood.

Decking

Materials commonly used for decking include standard dimension lumber (2X4 or 2X6), radius-edged decking, or a plastic composite decking product. Plastic composite decking products may only be used when meeting ASTM D7032 or when approved by the Building Division. Approval is based on the material carrying a third-party test report. Decking without a report will not be approved. The decking supplier should provide you with a copy of the research report.

Caution: Some manufactured deck products are approved for decking but not stair treads. In some cases, where manufactured decking is approved for stairs, the spacing of supports may be significantly reduced compared to using it on the deck itself. Read the research report for further information.

Maximum Joist Spacing for Decking

Decking Material Type and Nominal Size	Maximum On-Center Joist Spacing	
	Decking perpendicular to the joist	Decking diagonal to joists
1¼" thick wood	16"	12"
2" thick wood	24"	16"
Plastic composite	Per third-party test results	Per third-party test results

(a) Maximum angle of 45 degrees from perpendicular for wood deck boards.

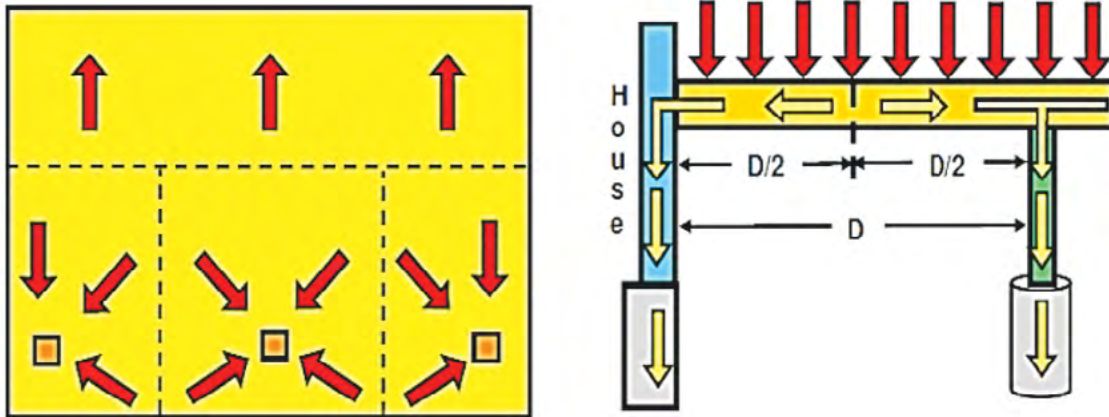
Fasteners

Nails and other hardware must be hot-dipped zinc-coated (galvanized), stainless steel or equal. Screws should be either hot-dipped, galvanized, or electroplated with a polymer coating. 12d nails are recommended on nominal 2-inch decking. 10d nails are recommended for 5/4" decking. With lag screws, use a flat washer under the head. Use washers under the nut and head of machine bolts and just under the nut of carriage bolts.

Footings

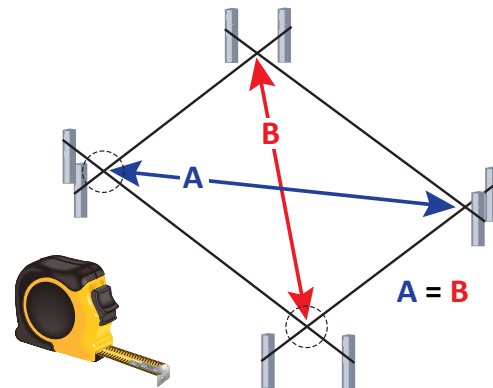
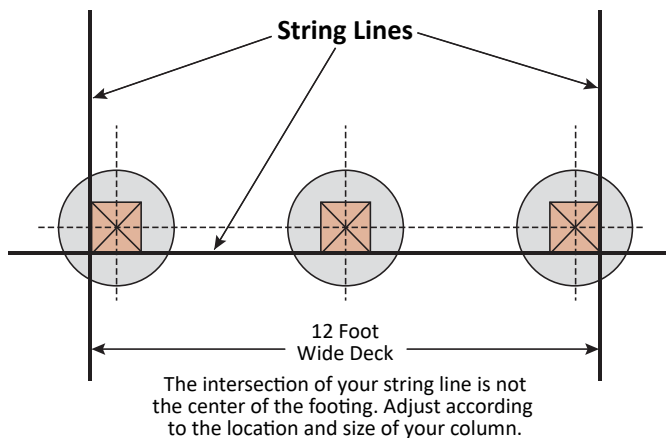
Footings supporting a 4X4 column must be no smaller than 6 inches in diameter. Post footings supporting columns larger than 4X4 must be 8-inch diameter or larger. The bottom of post footings may be “belled” to achieve the desired minimum bearing area. The base of the footing must be at least 42 inches below the finished grade. Rebar is recommended. Center the column on the footing secured by a pin or connector. Posts embedded in the ground must be 60% C.C.A. or equal. Using a fiberboard tube will allow elevation of the top of the footing above the finished grade to protect the wood post from lawnmowers and trimmers.

Understanding Load Paths



Loads are assumed to be uniform across the floor

Where Do I Put My Footings?



String Lines to Square Deck

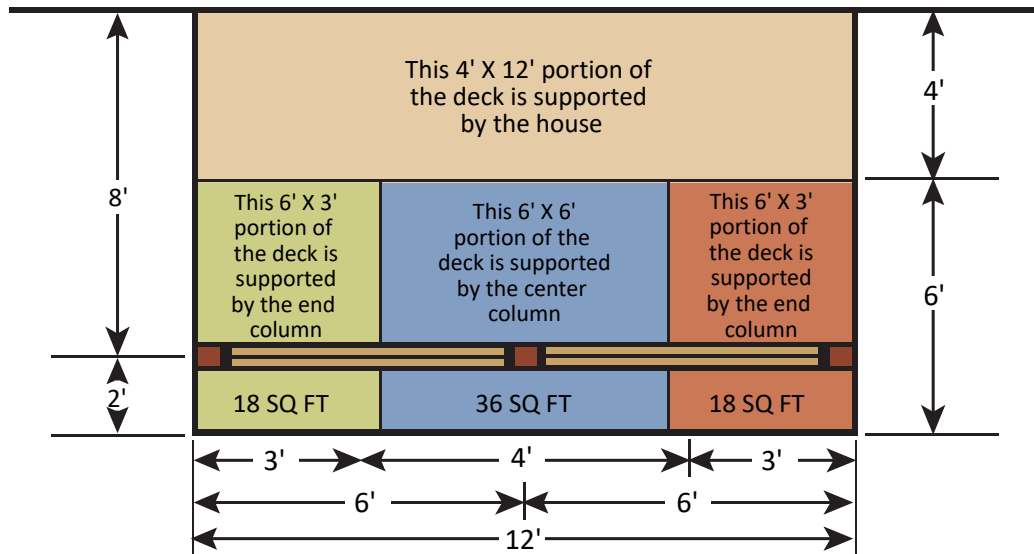
Required footing sizes are determined by calculating the area of the deck supported by each footing. Loads shall be assumed to be equally shared between the supporting elements. Don't overlook cantilevers. The minimum compressive strength of concrete used for deck footings and piers is 3,000 psi.

Deck footings should be sized according to the following table. Footings must extend at least 42 inches below grade to the frost line, except for decks not connected to a dwelling. The minimum compressive strength of concrete used for deck footings is 3,000 psi.

Table R507.3.1: Minimum footing sizes for decks (Not for support of hot tubs)

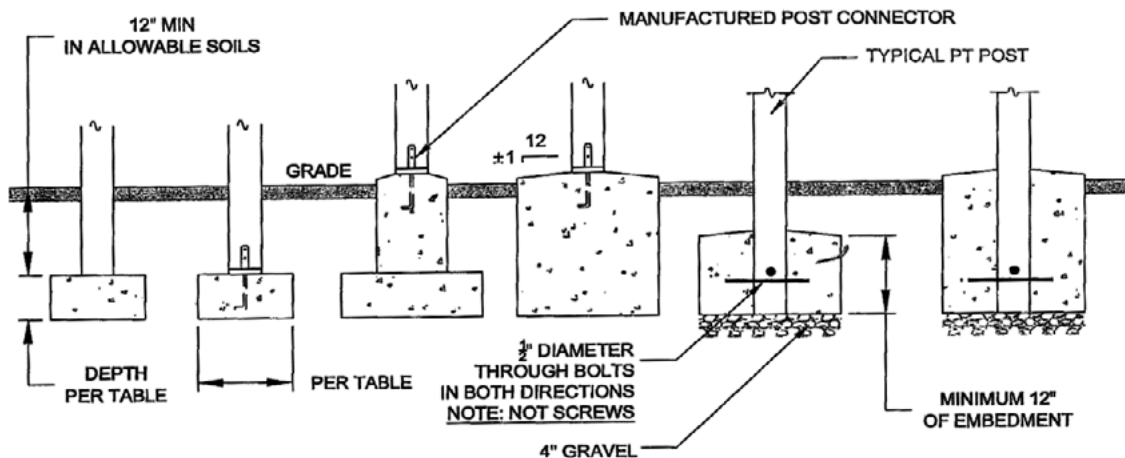
Live Load and Dead Load	Tributary Area (sq. ft ^a)	2000 ^a Soil Load Bearing Pressure		
		Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)
50	20	12	14	6
	40	12	14	6
	60	15	17	6
	80	17	19	6
	100	19	21	6
	120	21	23	7
	140	22	25	8
	160	24	27	9

(a) Area, in square feet, of deck surface supported by post and footings.

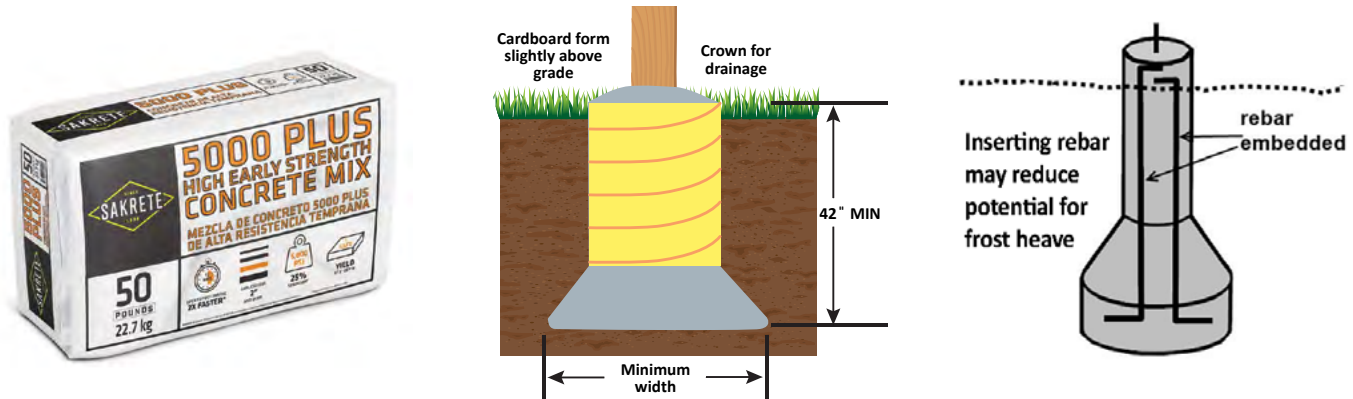


Deck post to deck footing connection.

The required area of the column should fully bear on the footing



Note: Posts must be centered on or in footing.



DECK FRAMING

Attachment of Ledger Board to Wood Joists (2x6, 2x8, 2x10, 2x12)

The size of the ledger must be equal to or larger than the size of the joists. Make sure the ledger is securely attached to the dwelling. Install metal flashing at the top. Refer to the manufacturer's instructions for ledger attachments to floors constructed with I-joists or trusses.

Table R507.9.1.3(1)

Deck Ledger Connection to Band Joist (Deck live load = 40 psf, deck dead load = 10 psf)

Connection Details	Joist Span						
	6' or less	6'1"-8'	8'1"-10'	10'1"-12'	12'1"-14'	14'1"-16'	16'1"-18'
	On-center spacing of fasteners						
½-inch diameter lag screw with ½-inch maximum sheathing ^{b,c}	30	23	18	15	13	11	10
½-inch diameter bolt with ½-inch maximum sheathing ^c	36	36	34	29	24	21	19
½-inch diameter bolt with 1-inch maximum sheathing ^d	36	36	29	24	21	18	16

For S1: 1 inch = 25.4mm, 1 foot = 304.8mm, 1 pound per square foot = 0.0479 kPa.

- Ledgers shall be flashed per Section R703.4 to prevent water from contacting the house band joist.
- The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- Sheathing shall be made of a wood or solid sawn lumber structural panel.
- Sheathing can be a wood structural panel, gypsum board, fiberboard, lumber or foam. Up to ½ inch thickness of stacked washers shall be permitted to substitute for up to ½ inch of allowable sheathing when combined with a wood structural panel or lumber sheathing.

Table R507.9.1.3(2)

Placement of Lag Screws and Bolts in Deck Ledgers and Band Joists

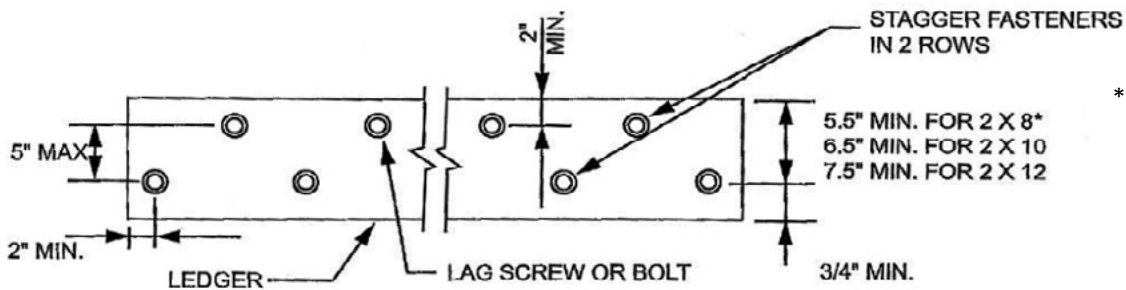
Minimum end and edge distances and spacing between rows				
	Top edge	Bottom edge	Ends	Row spacing
Ledger ^a	2 inches ^d	¾ inch	2 inches ^b	1 5/8 inches ^b
Band Joist ^c	¾ Inch	2 inches	2 inches ^b	1 5/8 inches ^b

For S1: 1 inch = 25.4mm.

- a. Lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger per Figure R507.9.1.3(1).
- b. Maximum 5 inches.
- c. the manufacturer's recommendations shall govern engineered rim joists.
- d. The minimum distance from the bottom of the row of lag screws to the top edge of the ledger shall be per Figure R507.9.1.3(1).

Figure R507.9.1.3(1)

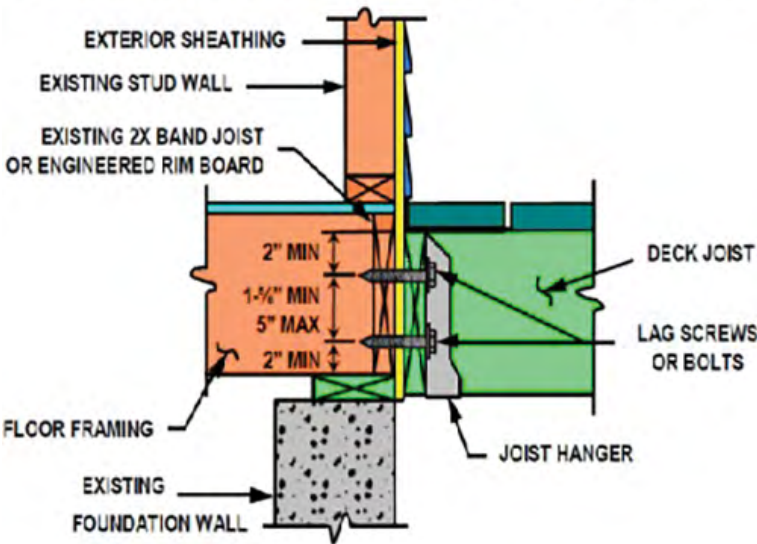
Placement of lag screws and bolts in the ledger.



* Distance shall be permitted to be reduced to 4.5" if lag screws are used or bolt spacing is reduced to that of lag screws to attach 2x8 ledgers to 2x8 band joists.

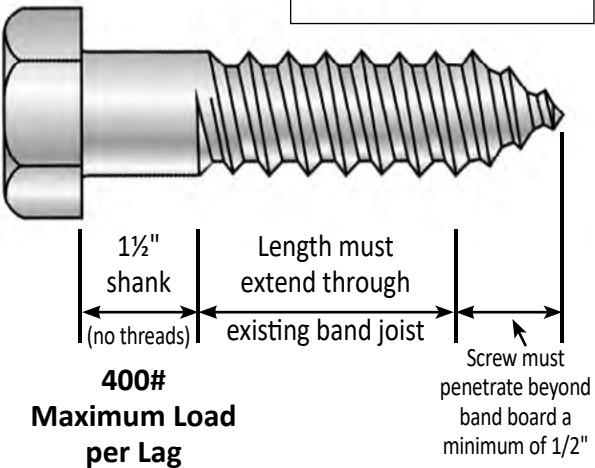
For SI: 1 inch = 25.4 mm.

PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS



**½" Diameter
Lag Screws
Minimum**

Lag screws must only be hot-dipped galvanized or stainless steel



Deck Beams

Construct beams using two or more 2-inch nominal pieces of lumber. Nail beams together using 10d nails at 16 inches on center along each beam edge and staggered. Beams should be installed with any arch or crown facing up. Attachments to columns should be with post caps designed for such use. Splices must occur over columns, and beams must bear a 1.5" minimum on posts.

Table R507.5

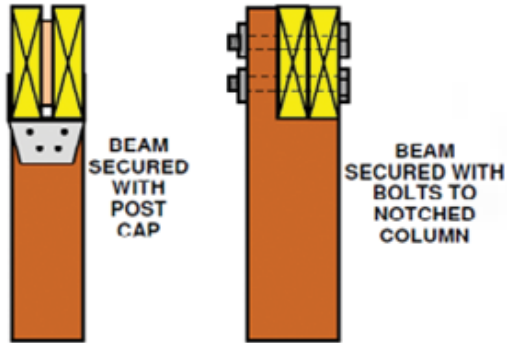
Deck Beam Span Lengths^{a, b, g} (feet - inches)

Species	Size	Deck Joist Span Less Than or Equal To: (feet)						
		6	8	10	12	14	16	18
Southern Pine	1 – 2x6	4-11	4-0	3-7	3-3	3-0	2-10	2-8
	1 – 2x8	5-11	5-1	4-7	4-2	2-10	3-7	3-5
	1 – 2x10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1 – 2x12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	2 – 2x6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2 – 2x8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2 – 2x10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2 – 2x12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3 – 2x6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3 – 2x8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3 – 2x10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3 – 2x12	15-3	13-3	11-10	10-9	10-0	9-4	8-10
Douglas fir - Larche, hem-fire, spruce-pine-fire, redwood, western cedars, ponderosa pine ^f , red pine ^f	3x6 or 2 – 2x6	5-5	4-8	4-2	3-10	3-6	3-1	2-9
	3x8 or 2 – 2x8	6-10	5-11	5-4	4-10	4-6	4-1	3-8
	3x10 or 2 – 2x10	8-4	7-3	6-6	5-11	5-6	5-1	4-8
	3x12 or 2 – 2x12	9-8	8-5	7-6	6-10	6-4	5-11	5-7
	4x6	6-5	5-6	4-11	4-6	4-2	3-11	3-8
	4x8	8-5	7-3	6-6	5-11	5-6	5-2	4-10
	4x10	9-11	8-7	7-8	7-0	6-6	6-1	5-8
	4x12	11-5	9-11	8-10	8-1	7-6	7-0	6-7
	3 – 2x6	7-4	6-8	6-0	5-6	5-1	4-9	4-6
	3 – 2x8	9-8	8-6	7-7	6-11	6-5	6-0	5-8
	3 – 2x10	12-0	10-5	9-4	8-6	7-10	7-4	6-11
	3 – 2x12	13-11	12-1	10-9	9-10	9-1	8-6	8-1

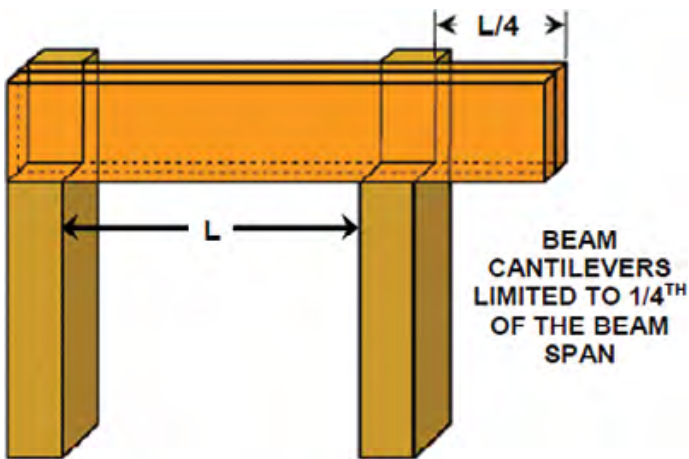
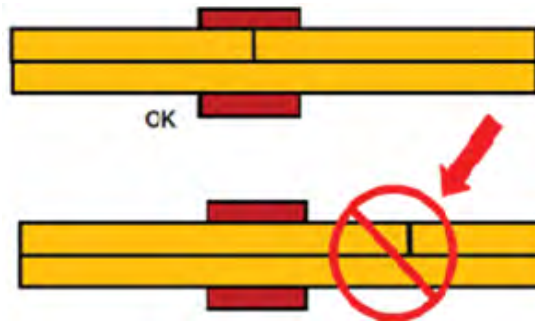
For S1: 1 inch = 25.4mm, 1 foot = 304.8mm, 1 pound per sq ft = 0.0479 kPa, 1 pound = 0.454kg.

- Live load** = 40 psf, **dead load** = 10 psf. $L/\Delta = 360$ at main span. $L/\Delta = 180$ at cantilever with a 220 lb. point load applied to the end.
- Beams supporting deck joists from one side only.
- No. 2 grade, wet service factor.
- Beam depth shall be greater than or equal to the depth of joists with a flush beam condition.
- Includes incising factor.
- Northern species. An incising factor is not included.
- Beam cantilevers are limited to the adjacent beam's span divided by 4.

Methods of attaching
beam to column.



Beam splices must bear must bear 1.5"
minimum on post.



Columns – Table R507.4

Deck Post Height^a

Deck Post Size	Maximum Height (feet-inches)
4X4	6-9 ^c
4X6	8
6X6	14
8X8	14

For S1: 1 inch = 25.4mm, 1 foot = 304.8mm, 1 pound per square foot = 0.0479 kPa.

- Measured to the underside of the beam.
- Based on 40 psf **live load**.
- The maximum permitted height is 8 feet for one-ply and two-ply beams.
The maximum permitted height for three-ply beams on a post cap is 6 feet 9 inches.

Joists

Table R507.6

Deck joist spans for common lumber species (feet to inches)

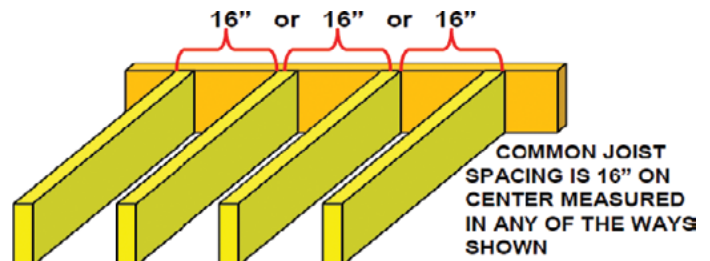
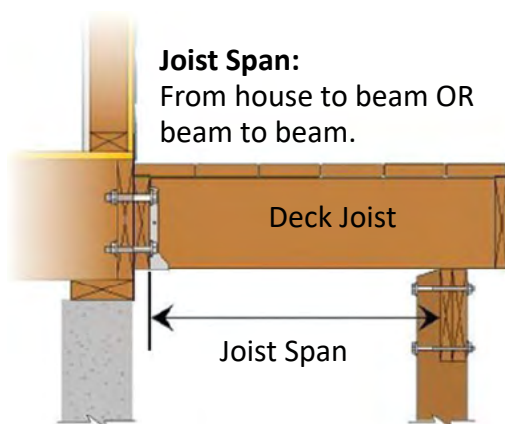
Species ^a	Size	Allowable Joist Span ^b			Maximum Cantilever ^{c, f}		
		Spacing of Deck Joists (Inches)			Spacing of Deck Joists with Cantilevers (Inches)		
		12	16	24	12	16	24
Southern pine	2X6	9-11	9-0	7-7	1-3	1-4	1-6
	2X8	13-1	11-10	9-8	2-1	2-3	2-5
	2X10	16-2	14-0	11-5	3-4	3-6	2-10
	2X12	18-0	16-6	13-6	4-6	4-2	3-4
Douglas fir- Larch ^d , hem-fir ^d , spruce pine fir ^d	2X6	9-6	8-8	7-2	1-2	1-3	1-5
	2X8	12-6	11-1	9-1	1-11	2-1	2-3
	2X10	15-8	13-7	11-1	3-1	3-5	2-9
	2X12	18-0	15-9	12-10	4-6	3-11	3-3
Redwood, western cedars, ponderosa pine ^e , red pine ^e	2X6	8-10	8-0	7-0	1-0	1-1	1-2
	2X8	11-8	10-7	8-8	1-8	1-10	2-0
	2X10	14-11	13-0	10-7	2-8	2-10	2-8
	2X12	17-5	15-1	12-4	3-10	3-9	3-1

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

- No. 2 grade with wet service factor.
- Live load** = 40 psf, **dead load** = 10 psf, $L/\Delta = 360$.
- Live load** = 40 psf, **dead load** = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever with a 220-pound point load applied to the end.
- Includes incising factor.
- Northern species with no incising factor.
- Cantilevered spans not exceeding the nominal depth of the joist are permitted.

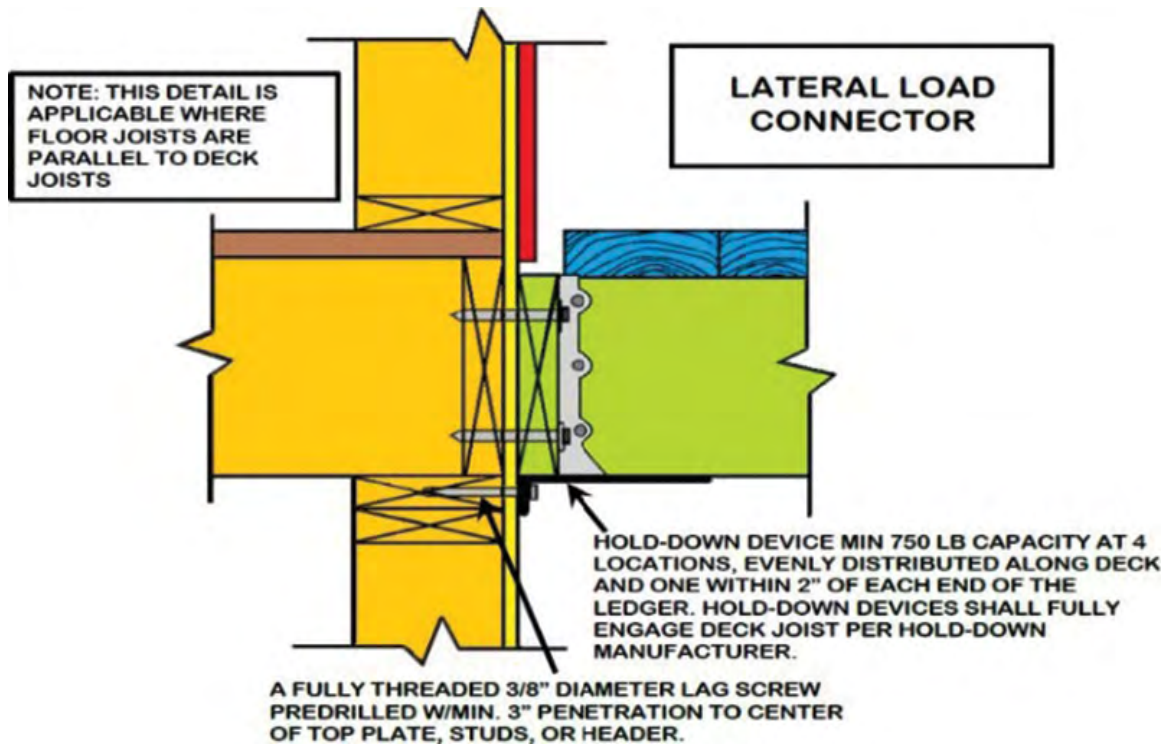
Joist Details

Joist spacing is determined by the type of decking used. 16" on center spacing must be used with 5/4 decking or when 2X6 or 2X4 decking is used at a 45° angle. 12" on center spacing is required when 5/4 decking is used at a 45° angle.



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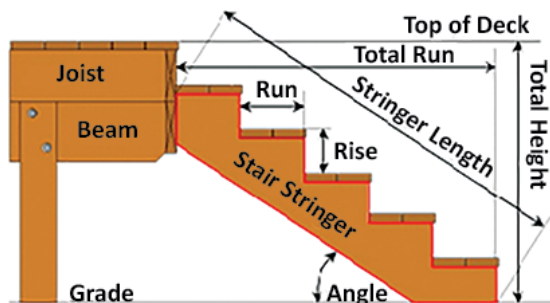
Lateral Load Connection



Stairs

Stairs must have a maximum rise of $7\frac{3}{4}$ inches and a minimum run of 10 inches measured as shown. The maximum riser height within any flight of stairs shall not exceed the smallest by more than $\frac{3}{8}$ inch. The maximum tread depth within any flight of stairs shall not exceed the smallest by more than $\frac{3}{8}$ inch. Open risers are permitted, provided a 4" diameter sphere will not pass between the treads. Stairways must be a minimum of 36 inches wide above the handrail and 31½ inches below the handrail.

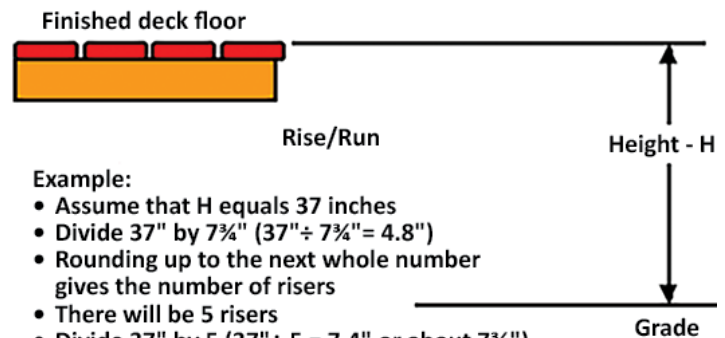
STAIR TERMINOLOGY



STAIR BASICS

- The maximum riser height is $7\frac{3}{4}$ inches
- The maximum tread run is 10 inches
- Treads and risers should be approximately equal with the largest not exceeding the smallest by more than $\frac{1}{4}$ inch.

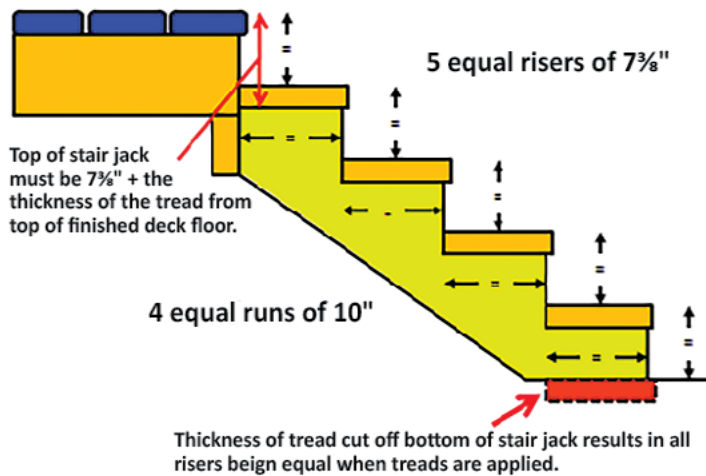
DETERMINING RISE/RUN



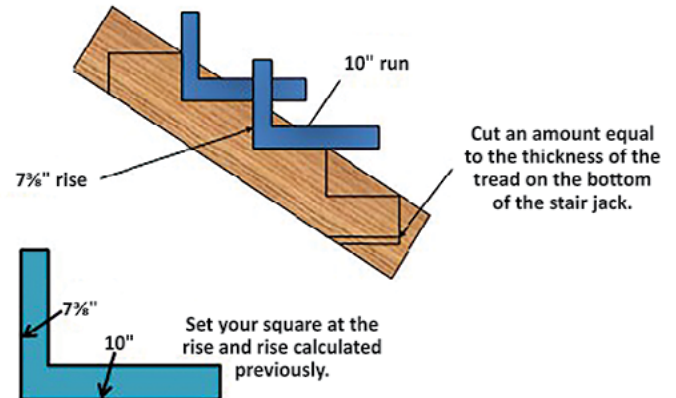
Example:

- Assume that H equals 37 inches
- Divide 37" by $7\frac{3}{4}$ " ($37" \div 7\frac{3}{4}" = 4.8"$)
- Rounding up to the next whole number gives the number of risers
- There will be 5 risers
- Divide 37" by 5 ($37" \div 5 = 7.4"$ or about $7\frac{3}{8}"$)
- Each riser will be $7\frac{3}{8}"$
- For 5 risers there will be 4 treads
- Since each tread must be at least 10", the length of the stair from the face of the deck to the face of the bottom riser will be at 40" ($10" \times 4 \text{ treads} = 40"$)

THE COMPLETED STAIR

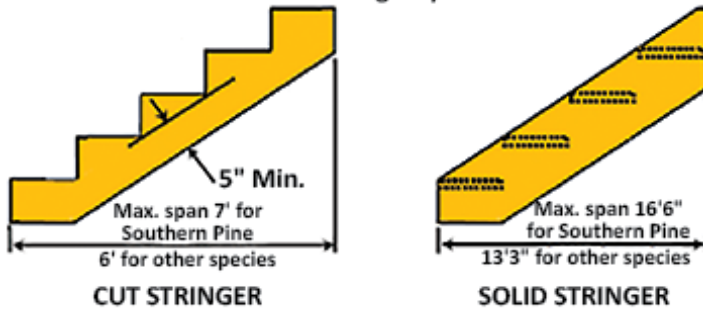


LAYING OUT STAIR JACKS

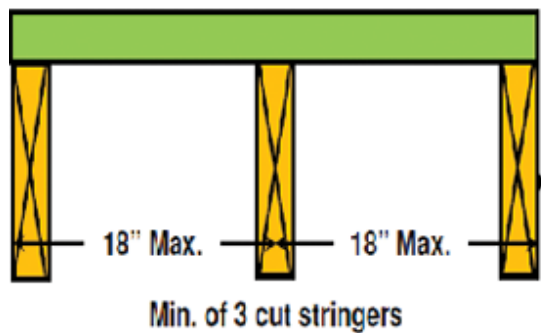


STAIR STRINGER SPANS

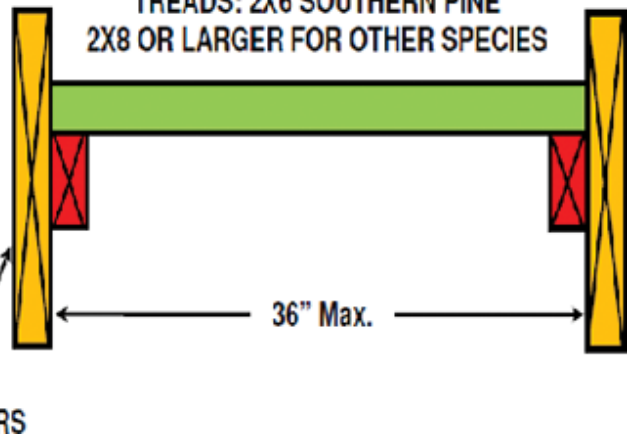
Landings or columns and beams may be used to shorten stringer spans



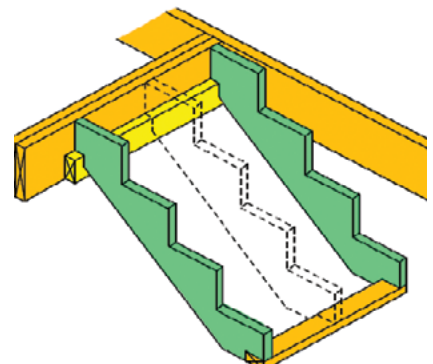
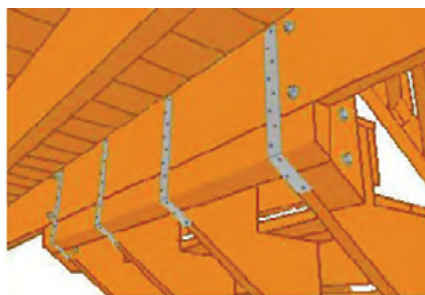
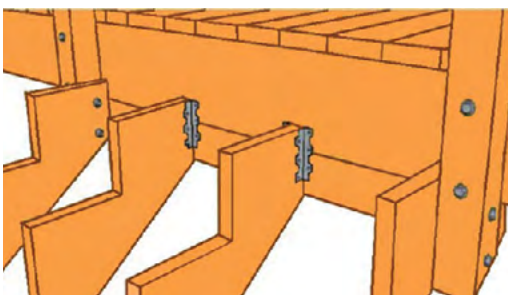
TREADS: 2X $\frac{1}{2}$ or 5/4 DECKING



TREADS: 2X6 SOUTHERN PINE
2X8 OR LARGER FOR OTHER SPECIES



Stair Attachments



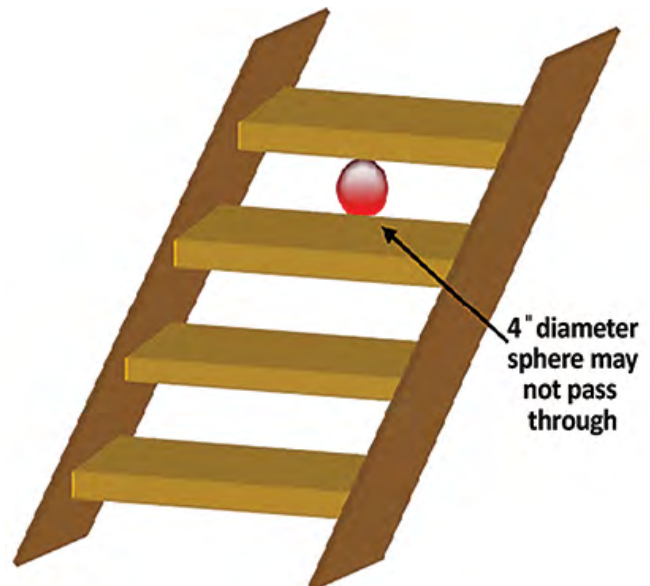
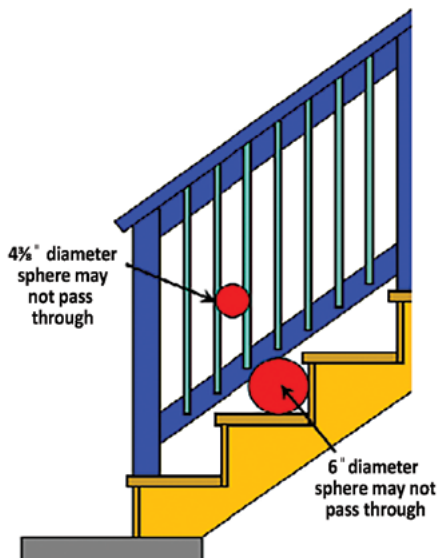
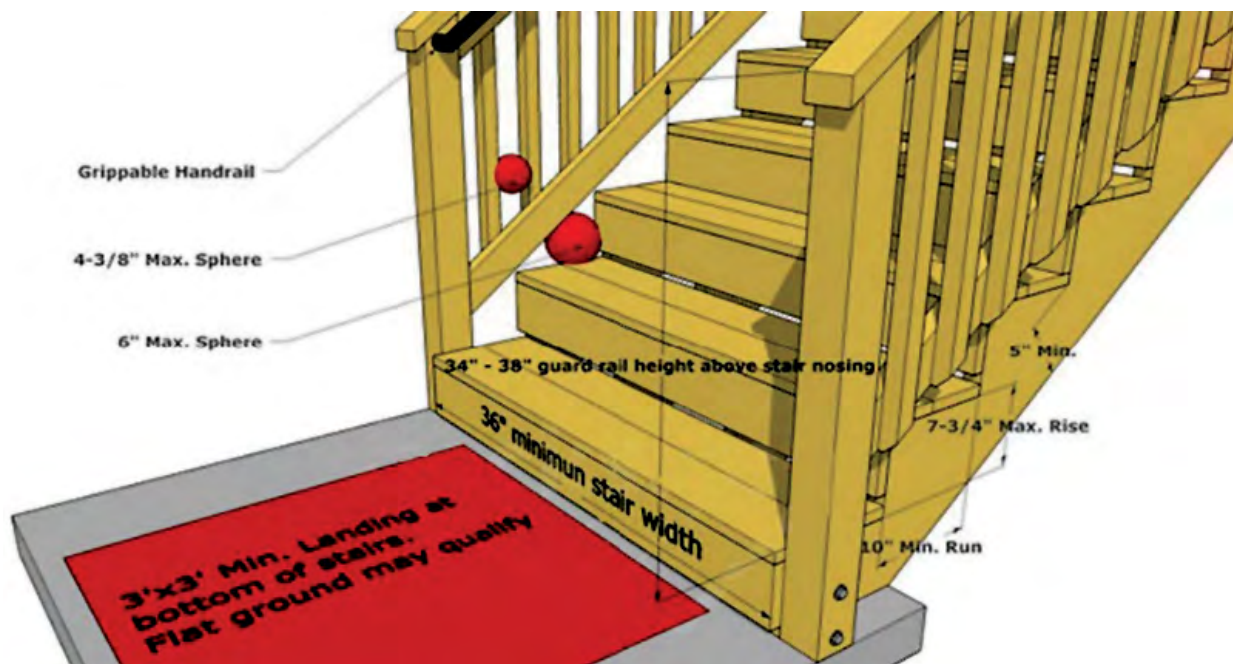
Guards and Handrails

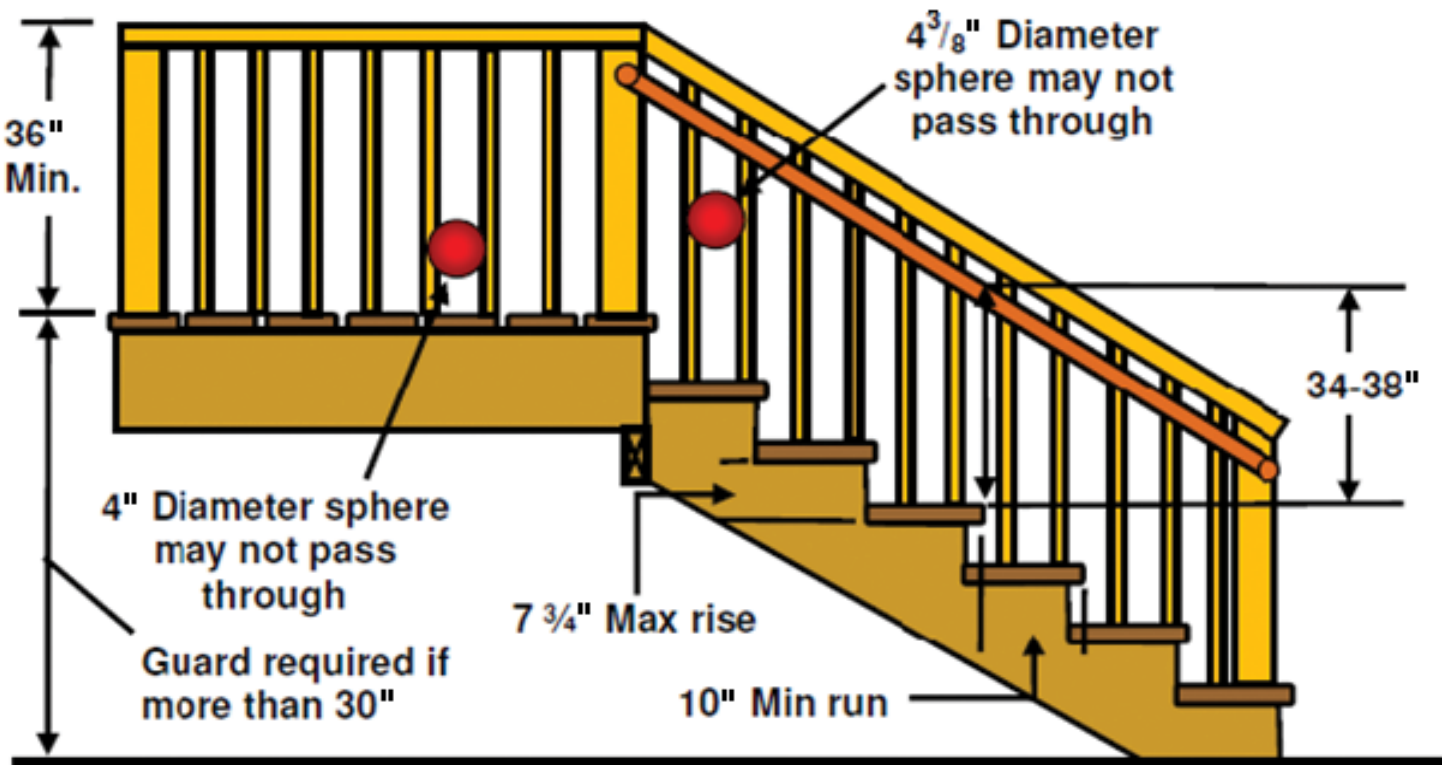
Guards and handrails must be provided, as shown in the following illustrations. Guards must continue downstairs, with stairs over 30 inches above grade. The height of guards on stairs must be 34 inches minimum.

Handrails must be provided on at least one side when there are four or more risers. Handrails must have returns on each end or terminate in a newel post. With prior approval from the Building Division, other handrail shapes with equivalent gripping shapes may be used.

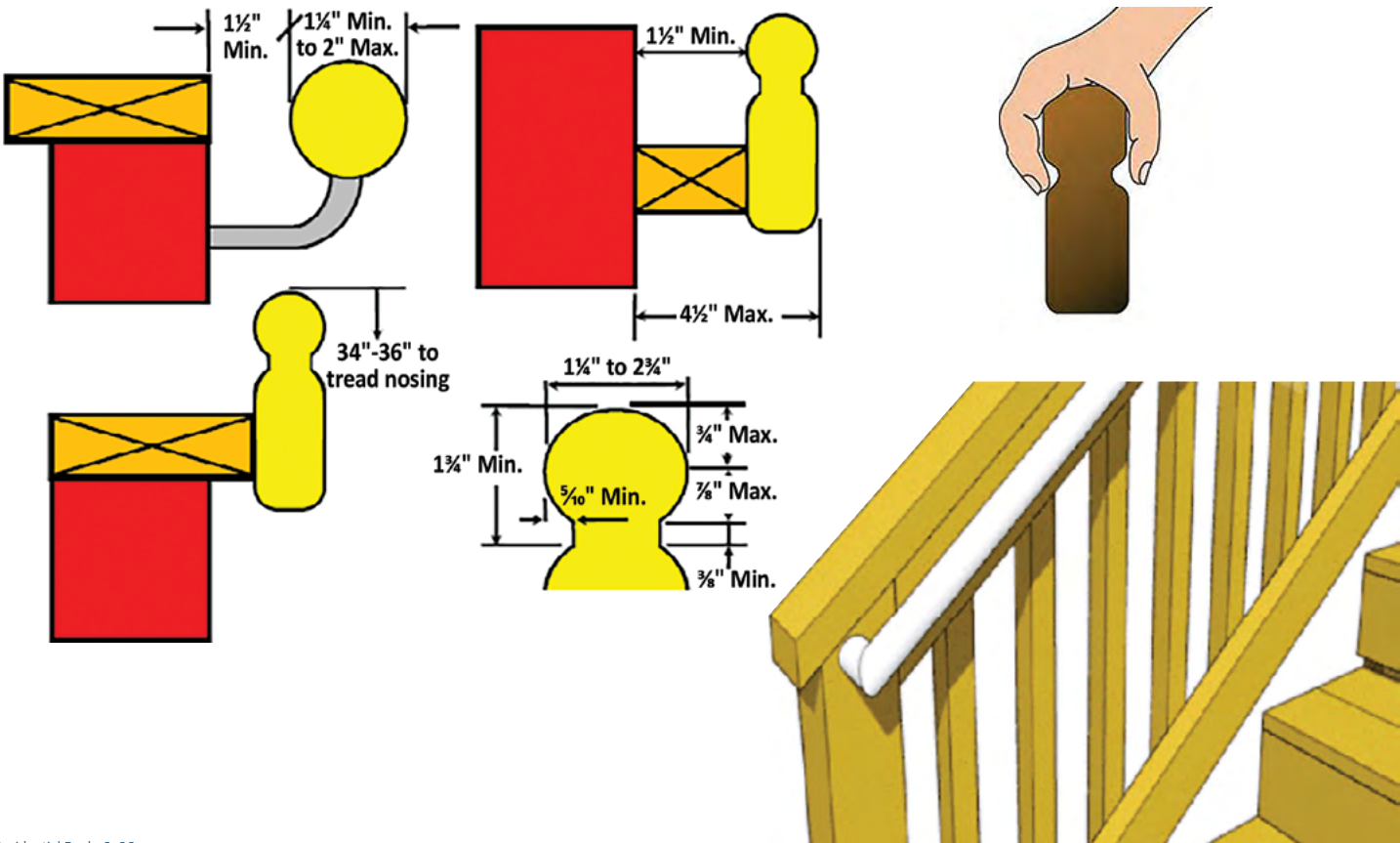
Handrails must be continuous for the entire length of the stairs and may not be interrupted by newel posts except at landings.

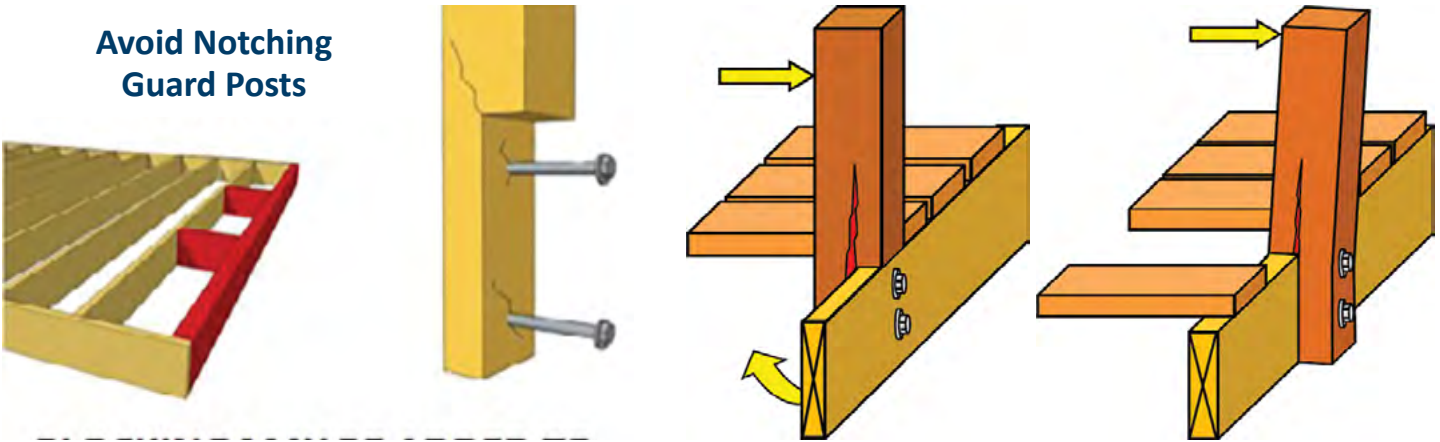
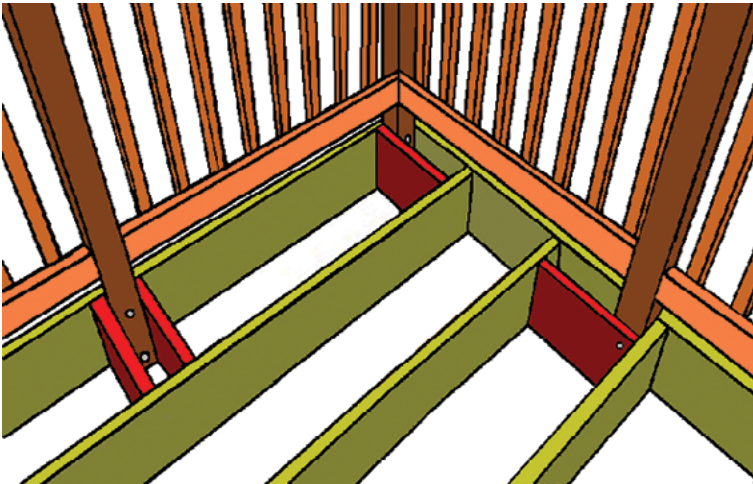
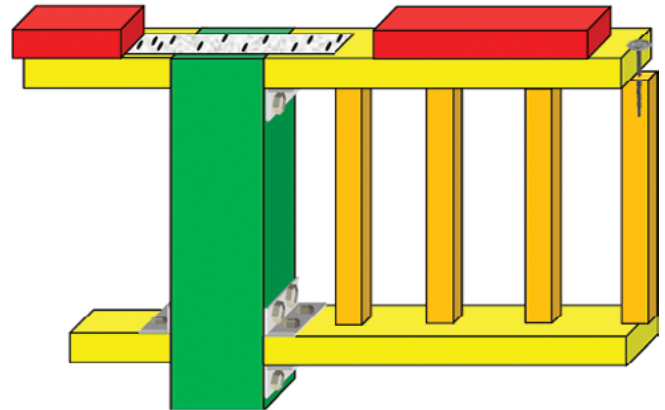
Handrails and guards must be designed to support a 200 lb. load applied in any direction along the top of the guard or rail. The bottoms of the stringers should rest on a sound foundation, such as a gravel bed, a concrete pad, pavers, or similar.





Handrails must be continuous for the length of the flight, without interruption and return to a newel post.



Avoid Notching Guard Posts**Blocking May Be Added to Strengthen Post Attachment****Examples of Devices that can be used to resist horizontal loads****Composites And Other Deck/Railing Products**

Wood/plastic composites used for exterior deck boards, stair treads, handrails and guardrail systems must bear labels indicating compliance with ASTM D7032 or a third-party test report must be made available.

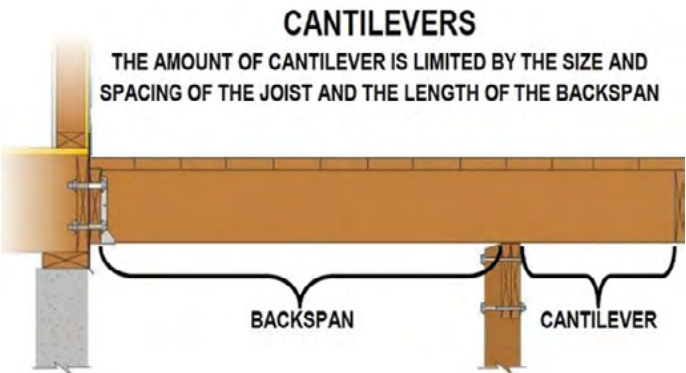
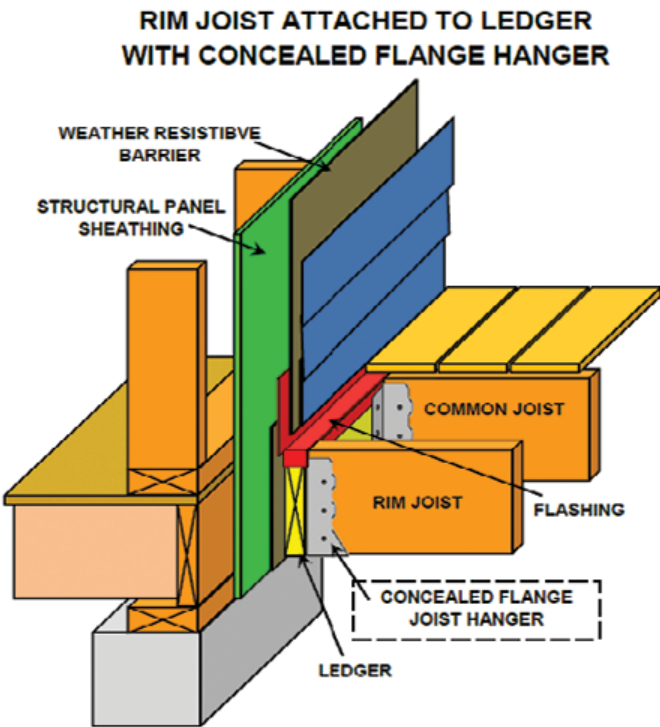
Wood/plastic composites complying with ASTM D7032 must be installed in accordance with the manufacturer's written installation instructions.

Wood/plastic composites having a third-party test report must be installed in accordance with the manufacturer's installation instructions and the report.

Read the instructions and the reports carefully. All products have specific requirements for stair treads. Some are limited to installation perpendicular to joists only.

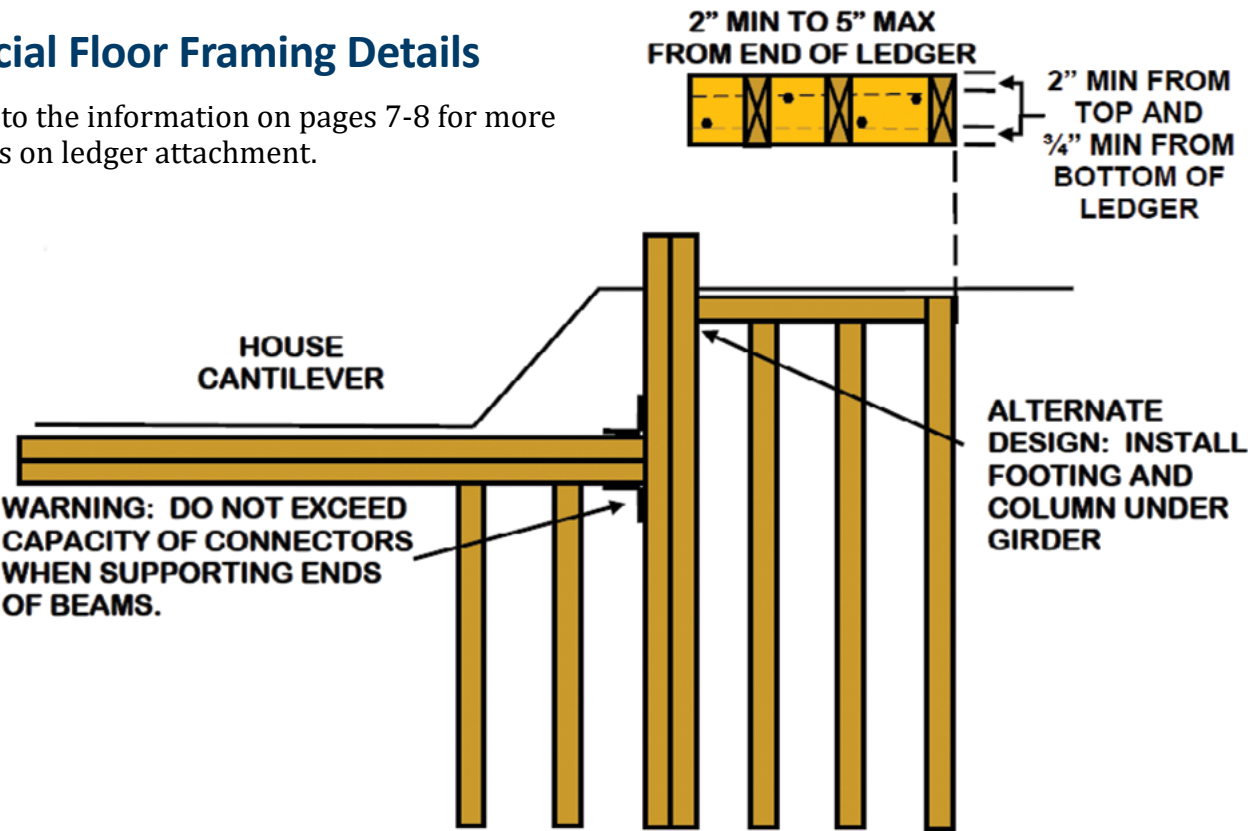
Products made of aluminum, steel, glass, or any other man-made product may be used if the manufacturer has a third-party testing agency from the international code council and the product is installed in strict accordance with that report or site-specific engineering is provided.

Additional Information

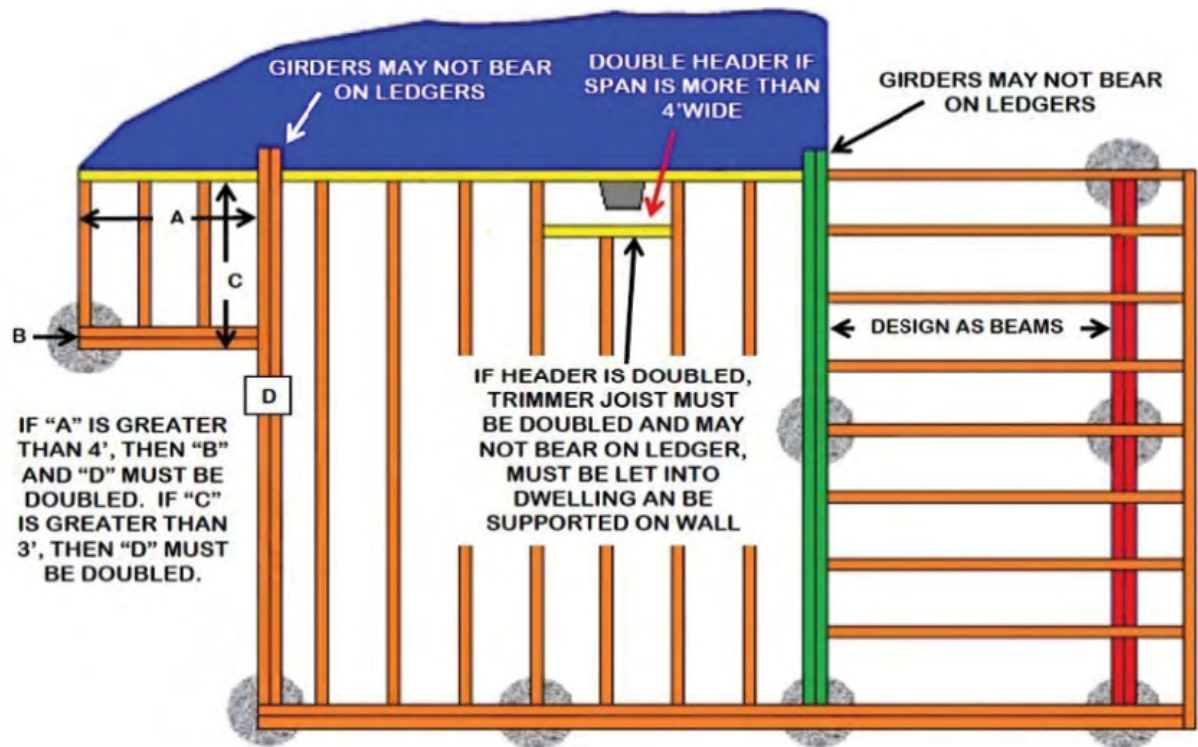


Special Floor Framing Details

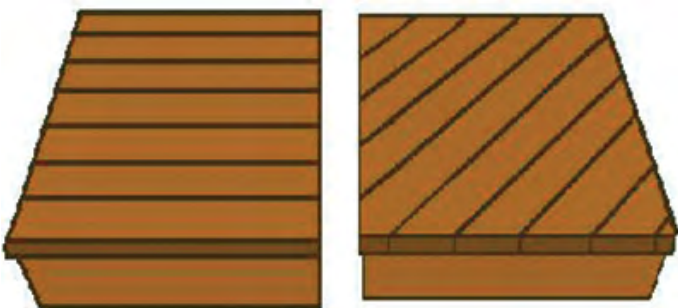
Refer to the information on pages 7-8 for more details on ledger attachment.



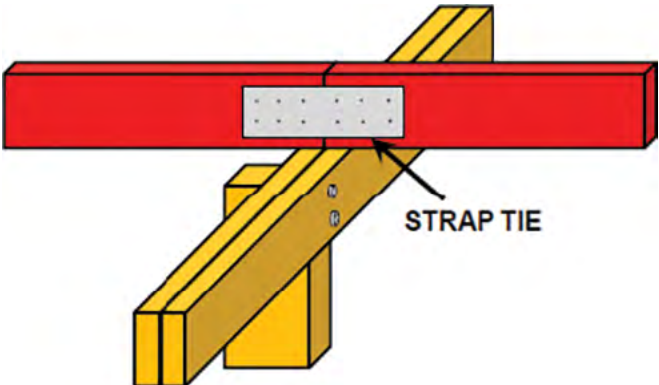
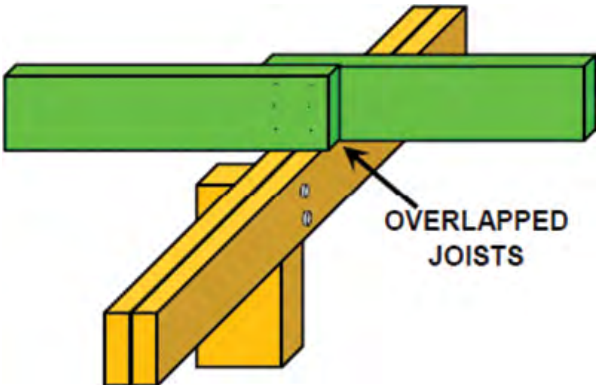
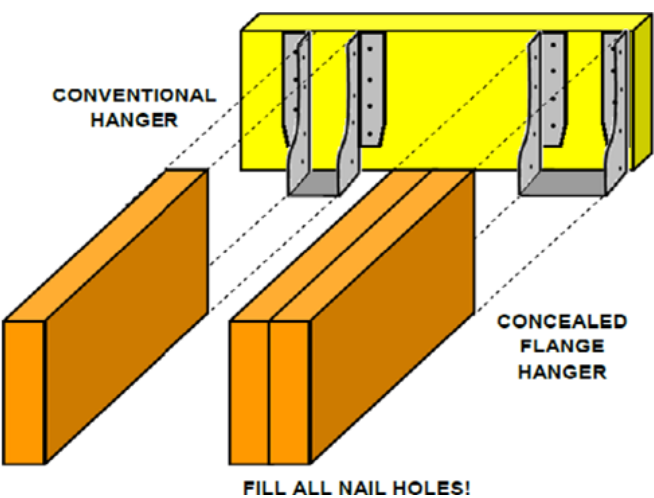
WARNING: CAPACITY OF LAG OR CARRIAGE BOLTS SHALL NOT EXCEED 400 LB'S PER BOLT UNLESS DESIGN PROVIDED.



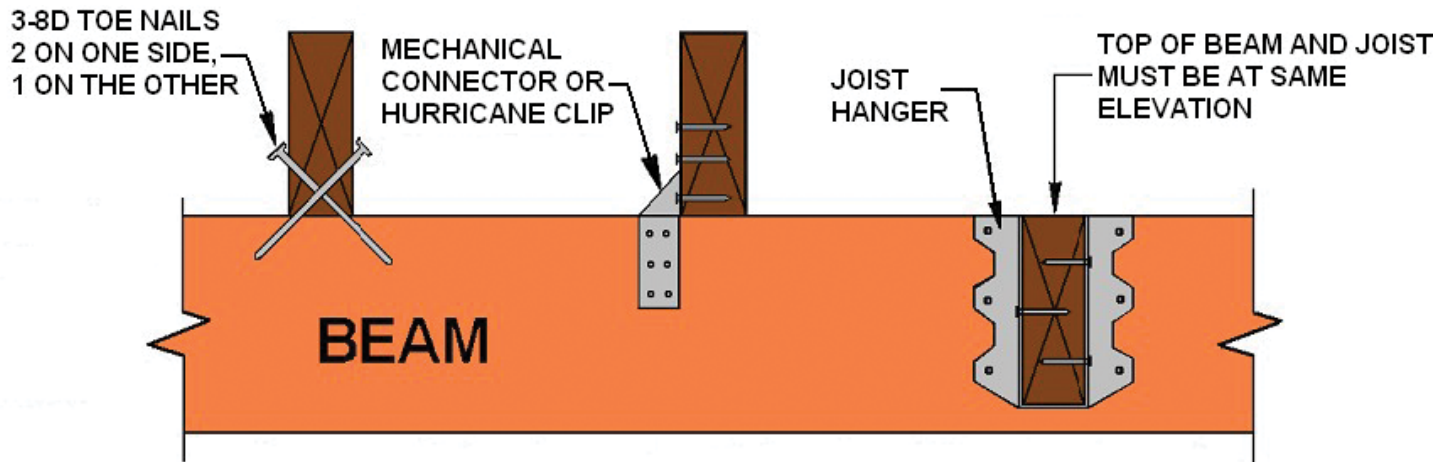
Wood Decking



5/4" x 6"	5/4" x 4"
2" x 6"	2" x 4"



Joist To Beam Attachments



Joists must be supported by a beam, ledger strip, or joist hangers. Joist hangers must be installed according to the manufacturer's recommendations. Fill all nail holes in joist hangers.

